

EAST OF RIVER 9000+ PROJECT

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Salt River Project

STEP Meeting

December 8, 2004

San Diego, California

OVERVIEW OF EOR 9000+ STUDY RESULTS

- A. Non-Simultaneous EOR 9,300MW Transfer
 - 1. Various Dispatch Scenarios
 - 2. With and Without Mohave Generation
- B. Simultaneous SCIT/EOR Transfer
 - 1. 645MW to S. California and 600MW to Nevada/Mead Area
 - 2. 645MW to S. California and 600MW to N. California
 - 3. With and Without Mohave Generation
- C. Issues and Challenges for Simultaneous Impact Study
- D. Study Schedules/Project In-Service Date

EXHIBIT 1

NON-SIMULTANEOUS EOR STUDY RESULTS

(I) WITHOUT MOHAVE

EOR LINES	PRE-PROJECT EOR 8055 MW CAPACITY	(A) POST-PROJECT 9300 MW :NEV(50%),LADWP(30%) & PG&E(20%)		(B) POST-PROJECT 9300 MW :NEV(16%),LA(20%),PGE(20%) SCE(33%)&SDGE (11%)	
	BASE CASE	BASE CASE	DELTA	BASE CASE	DELTA
NAVAJO-CRYSTAL 500 kV	1466 MW	1647 MW	181 MW	1639 MW	173 MW
MOENKOPI-ELDORADO 500 kV	1432 MW	1629 MW	197 MW	1627 MW	195 MW
PERKINS-MEAD 500 kV	1300 MW	1744 MW	444 MW	1655 MW	355 MW
LIBERTY-MEAD 345 kV	449 MW	449 MW	0 MW	449 MW	0 MW
EO(NORTHERN)	4647 MW	5469 MW	822 MW	5370 MW	723 MW
PALO VERDE-DEVERS 500 kV	1863 MW	2110 MW	247 MW	2133 MW	270 MW
HASSAYAMPA-N.GILA 500 kV	1545 MW	1721 MW	176 MW	1797 MW	252 MW
EO(SOUTHERN)	3408 MW	3831 MW	423 MW	3930 MW	522 MW
EO TOTAL	8055 MW	9300 MW	1245 MW	9300 MW	1245 MW
POWER FLOW LIMIT		(ASSUMED NAV-CRY & PK-MEAD SC TO BE UPGRADED)			
N-1 CONTINGENCY	PV-DV OUT	NAV-CRY OUT		NAV-CRY OUT	
LIMITING ELEMENT(% EMERG. RATING)	PK-MD @100.8%	MK-EL@100.0%		MK-EL@100.0%	
AREA INTERCHANGE					
ARIZONA	7680 MW	9156 MW	1476 MW	9169 MW	1489 MW
NEVADA	(532) MW	(1297) MW	(765) MW	(782) MW	(250) MW
SDG&E	(2510) MW	(2510) MW	0 MW	(2675) MW	(165) MW
LADWP	(1812) MW	(2223) MW	(411) MW	(2086) MW	(274) MW
PG&E	(3913) MW	(4213) MW	(300) MW	(4213) MW	(300) MW
SOCAL	(3911) MW	(3911) MW	0 MW	(4411) MW	(500) MW

EXHIBIT 2

NON-SIMULTANEOUS EOR STUDY RESULTS

(II) WITH MOHAVE

EOR LINES	PRE-PROJECT EOR 8055 MW CAPACITY	(C) POST-PROJECT 9300 MW :NEV(50%),LADWP(30%) & PG&E(20%)		(D) POST-PROJECT 9300 MW :NEV(16%),LA(20%),PGE(20%) SCE(33%)&SDGE (11%)	
	BASE CASE	BASE CASE	DELTA	BASE CASE	DELTA
NAVAJO-CRYSTAL 500 kV	1417 MW	1628 MW	211 MW	1604 MW	187 MW
MOENKOPI-ELDORADO 500 kV	1356 MW	1601 MW	245 MW	1567 MW	211 MW
PERKINS-MEAD 500 kV	1300 MW	1677 MW	377 MW	1592 MW	290 MW
LIBERTY-MEAD 345 kV	449 MW	449 MW	0 MW	449 MW	0 MW
EO(NORTHERN)	4522 MW	5355 MW	833 MW	5212 MW	690 MW
PALO VERDE-DEVERS 500 kV	1928 MW	2169 MW	241 MW	2207 MW	279 MW
HASSAYAMPA-N.GILA 500 kV	1605 MW	1776 MW	171 MW	1881 MW	273 MW
EO(SOUTHERN)	3533 MW	3945 MW	412 MW	4088 MW	555 MW
EO TOTAL	8055 MW	9300 MW	1245 MW	9300 MW	1245 MW
POWER FLOW LIMIT		(ASSUMED NAV-CRY & PK-MEAD SC TO BE UPGRADED)			
N-1 CONTINGENCY	PV-DV OUT	NAV-CRY OUT		NAV-CRY OUT	
LIMITING ELEMENT(% EMERG. RATING)	PK-MD @100.9%	MKP-ELD @97.5%		MKP-ELD @96.6%	
AREA INTERCHANGE					
ARIZONA	7708 MW	9216 MW	1508 MW	9221 MW	1513 MW
NEVADA	(532) MW	(1297) MW	(765) MW	(782) MW	(250) MW
SDG&E	(2510) MW	(2510) MW	0 MW	(2670) MW	(160) MW
LADWP	(1811) MW	(2254) MW	(443) MW	(2114) MW	(303) MW
PG&E	(3913) MW	(4213) MW	(300) MW	(4213) MW	(300) MW
SOCAL	(3940) MW	(3940) MW	0 MW	(4440) MW	(500) MW

NON-SIMULTANEOUS EOR TRANSFER OF 9,300MW IS ACHIEVABLE

- Perkins PST By-Passed
- Mead-Perkins Series Capacitor Correct Rating Increase

	<u>Existing</u>	<u>Future</u>
Continuous	1430 Amp	2200 Amp
Emergency	1930 Amp	2970 Amp

- Navajo – Crystal Series Capacitor (@ Navajo End) Upgrade

	<u>Existing</u>	<u>Future</u>
Continuous	1630 Amp	2080_Amp

- Power Flow Limiting Condition:

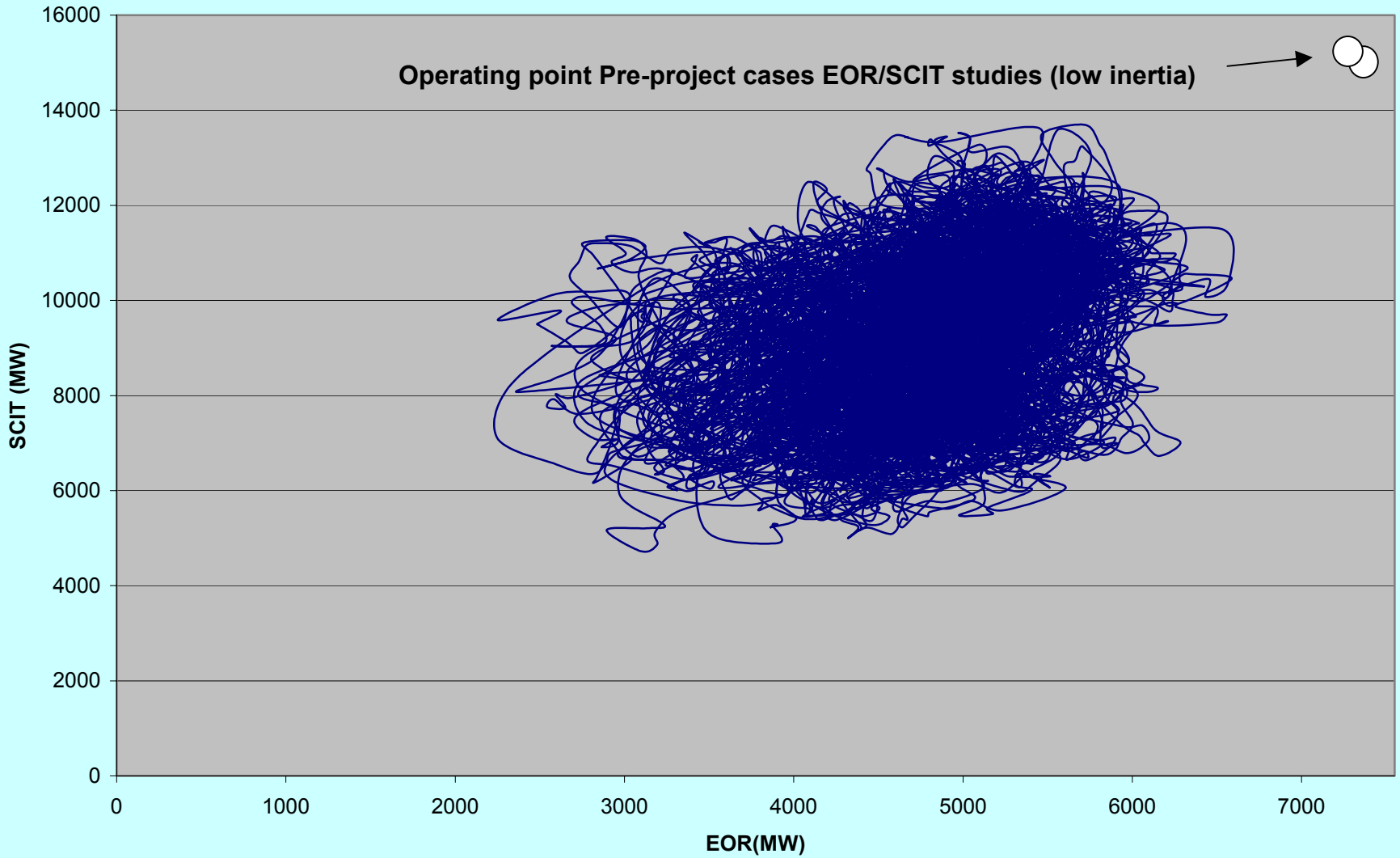
Moenkopi - El Dorado Series Capacitors at 2750 Amp (Emergency Rating) for Loss of Palo Verde – Devers Line

Issues & Challenges for Simultaneous Impact Study:

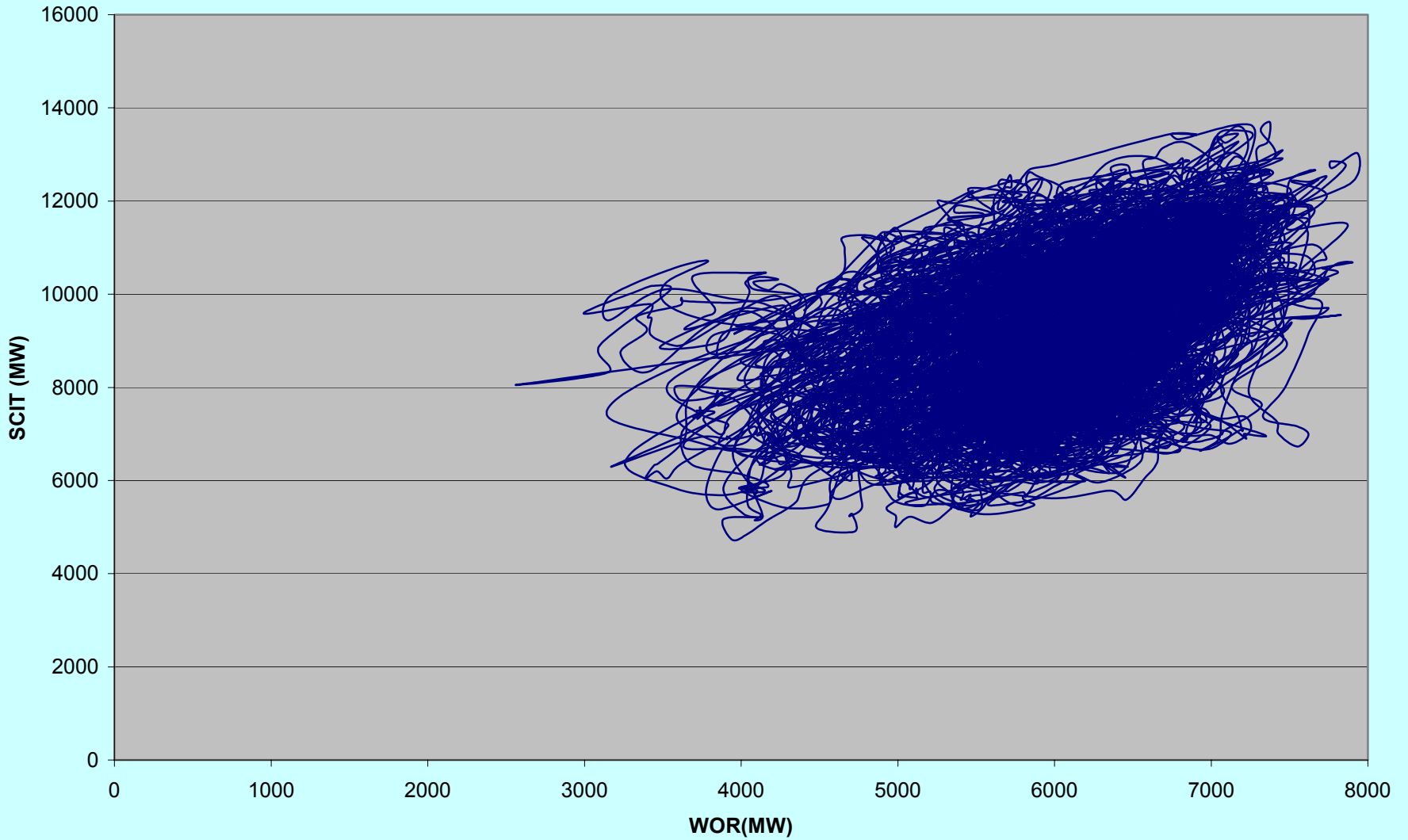
- **SCE raised an issue on the WOR impact due to the non-simultaneous EOR Transfer:**
 - All other parallel path flows should be at flow levels that result in non-interaction with the path being rated.

- **SCE insisted on the same principles & methodology when conducting the Simultaneous Impact Study:**
 - Var support requirements for the steady-state, transient and post-transient stability conditions will be determined
 - Approximately more or less amount of Var support as shown in the 8,055MW EOR upgrade will be required for this 9,300MW EOR project.

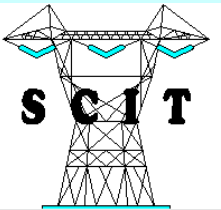
SCIT plotted against EOR - actual data Oct.1 2003 - Oct.1 2004



SCIT plotted against WOR - actual data Oct.1 2003 - Oct.1 2004



East-of-River/Southern California Import Transmission Nomogram



Based upon:
 Three Palo Verde units
 All transmission facilities in service

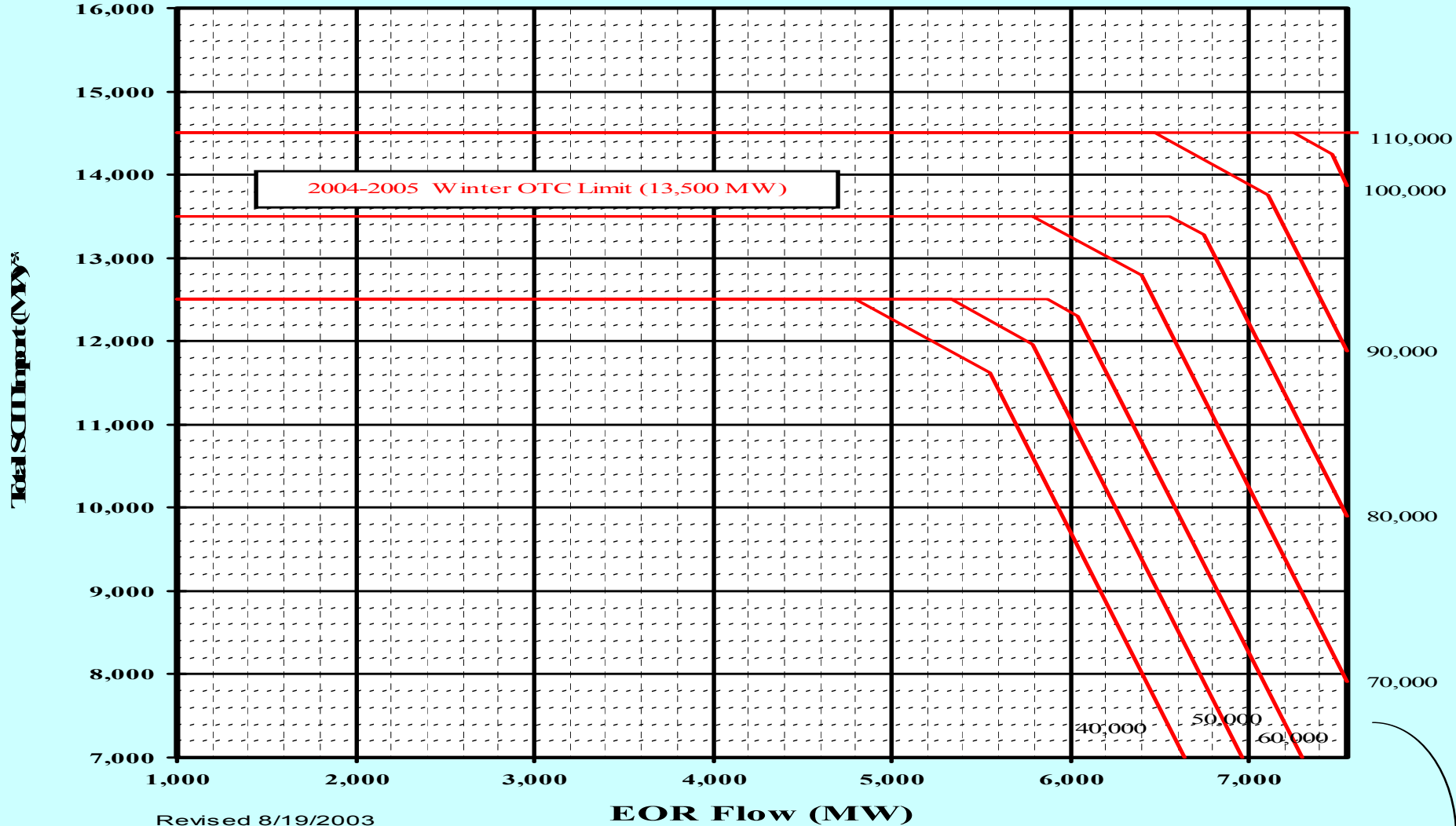
Reduction in SCIT Import Limit
 For Palo Verde Status:

3 units on Line	200 MW
2 units on Line	400 MW
1 unit on Line	400 MW
0 unit on Line	700 MW

500 MW Operating Margin Taken Normal to the Limits

SCIT Maximum Non-simultaneous Import Capacity= 19286 MW

Inertia (MWS)



Revised 8/19/2003
 CAISO

EOR Maximum Non-simultaneous Rating = 7550 MW

*Sum of flows on Midway-Vincent, PDCI, IPP, North of Lugo, and WOR.

Study Schedules and Project Upgrade In-Service Date:

● **June 30, 2005 Phase II WECC Accepted Rating Study Completion:**

- Non-simultaneous: December 1, 2004
- Simultaneous SCIT/EOR: March 15, 2005
- Impact on Path 27 (IPPDC), 41 (SYLMAR-SCE), 61 (Lugo – VCTR), 64 (MKTP-ADEL) and 65 (PDCI)

May 15, 2005

- Sensitivity Studies: June 15, 2005

● **Project In-Service Date:**

- Originally Projected In-Service Date: 2008
- Equipment Procurement Needs 12-16 Months.
- Could possibly move up to 2007?